In the claims:

Following is a complete set of claims as amended with this Response.

1-38. (Canceled)

39. (Currently Amended) A DSL (Digital Subscriber Line) system comprising:

a multiple loop segment comprising a plurality of bonded loops, each loop comprising a twisted pair of wires, the loops being coupled at one end to a controller and at the other end, opposite the controller, to a plurality of different customer premises equipments (CPEs) that are in different locations to provide at least one DSL communications channel to each respective CPE, there being at least one loop coupled to each CPE;

the controller to monitor the multiple loop segment and to generate control signals based on the monitoring; and

a vectoring unit also coupled to a plurality of the loops of the multiple loop segment at the controller end of the multiple loop segment, to receive the control signals and to vector transmissions simultaneously ~~to the CPEs~~ through the coupled plurality of the ~~communications channels across multiple~~ loops of the multiple loop segment, the coupled plurality of the loops being ~~that are~~ coupled to different CPEs,

wherein for at least one CPE, a plurality of twisted pairs of wires are coupled to the CPE such that one wire of the plurality of twisted pairs of wires is selected as a reference wire and the other wires of the plurality of twisted pairs of wires are referenced to the reference wire to provide more communications channels than there are twisted pairs.

40. (Previously Presented) The DSL system of Claim 39, wherein the control signals are used to operate the multiple loop segment as a vectored system across all loops of the multiple loop segment that carry active communications channels.

41. (Previously Presented) The DSL system of Claim 39, wherein the vectoring unit comprises a pedestal vectoring unit (PVU) and wherein the PVU vectors transmissions to and from the CPEs using the control signals.

42. (Previously Presented) The DSL system of Claim 41, wherein the PVU is in a pedestal.

43. (Previously Presented) The DSL system of Claim 42, wherein the PVU comprises a vector signal processing module and wherein the controller comprises a vectoring control means coupled to the vector signal processing module.

44 (Previously Presented) The DSL system of Claim 41, further comprising a customer vectoring unit (CVU) at the CPE and coupled to the controller to vector transmissions to and from the CPEs.

45 (Previously Presented) The DSL system of Claim 44, wherein the PVU is in a first pedestal and the CVU is in a second pedestal.

46. (Previously Presented) The DSL system of Claim 39, wherein at least one of the communication channels is operated using an expanded frequency spectrum.

47. (Previously Presented) The DSL system of Claim 39, wherein the controller comprises a frequency bandwidth controlling means used in transmitting data across the multiple loop segment.

48. (Previously Presented) The DSL system of Claim 39, wherein the controller is a dynamic spectrum manager comprising vectoring control means.

49. (Previously Presented) The DSL system of Claim 48, wherein the controller comprises a computer system.

50. (Previously Presented) The DSL system of Claim 39, further comprising a first impedance matching circuit coupled to a first end of the multiple loop segment and a second impedance matching circuit coupled to a second end of the multiple loop segment.

51. (Previously Presented) The DSL system of Claim 50, further comprising placing an impedance between each wire and each other wire.

52. (Currently Amended) The DSL system of Claim 39, wherein the DSL system is one of an ADSL (Asymmetric DSL) system and a VDSL (Very High Bit Rate DSL) system.

53. (Currently Amended) The DSL system of Claim 39, wherein the loops are bonded using one of the following bonding protocols: TDIM (Time Division Inverse Multiplexing) bonding; Ethernet bonding; ATM (Asynchronous Transfer Mode) bonding; or the G.bond protocol.

54. (Previously Presented) The DSL system of Claim 39, wherein the plurality of twisted pairs number K twisted pairs so that there are 2K wires in the segment, one of the 2K wires being selected as a reference wire, the remaining (2K-1) wires being referenced to the reference wire to provide up to (2K-1) communications channels, the (2K-1) channels using vectoring across the channels.

55. (Currently Amended) A DSL system comprising:

a multiple loop segment comprising a plurality of bonded loops, each loop in the multiple loop segment having a pair of wires, the segment being coupled at a first end to a plurality of different customer premises equipments (CPEs) to provide different

channels to different CPEs that are in different locations, the wires of the multiple loop segment being connected so that at least two wires of the multiple bonded loops each carry a communication channel using a third wire of the multiple bonded loops as a common reference wire,

a first vectoring unit coupled at the first end of the multiple loop segment resident at one of the CPEs of the plurality of different CPEs, the first vectoring unit comprising a first vector signal processing module; and

a second vectoring unit coupled to a plurality of the loops of the multiple loop segment at a second end opposite the first end of the multiple loop segment opposite the plurality of CPEs and comprising a second vector signal processing module;

wherein the first and second vectoring units provide vectored transmissions across the multiple loop segment, the second vectoring unit vectoring upstream and downstream transmissions with the plurality of CPEs simultaneously across all active channels of the coupled plurality of the loops of the segment across different CPEs.

56. (Previously Presented) The DSL system of Claim 55, further comprising a controller coupled to the second end of the multiple loop segment and to the first and second vectoring units, the controller comprising vectoring control means to assist in regulating transmissions across the multiple loop segment.

57. (Previously Presented) The DSL system of Claim 56, wherein the controller is a dynamic spectrum manager.

58. (Previously Presented) The DSL system of Claim 56, wherein the controller further comprises frequency bandwidth control means for regulating the frequency bandwidth used in transmissions across the multiple loop segment.

59. (Previously Presented) The DSL system of Claim 55, wherein the first vectoring unit is in a first pedestal and further wherein the second vectoring unit is in a second pedestal.

60. (Previously Presented) The DSL system of Claim 55, wherein the first vectoring unit is in a customer premises and further wherein the second vectoring unit is in a pedestal

61. (Previously Presented) The DSL system of Claim 55, further comprising a first impedance matching circuit coupled to the first end of the multiple loop segment and a second impedance matching circuit coupled to the second end of the multiple loop segment.

62. (Currently Amended) A DSL system comprising:

a multiple loop segment, each loop in the multiple loop segment having a pair of wires, the wires being connected as communication channels to a plurality of different customer premises equipments (CPEs) coupled to one end of the multiple loop segment to provide different channels to different CPEs that are in different locations, the wires in each loop being connected so that at least two wires of the multiple bonded loops each carry a communication channel using a third wire of the multiple bonded loops as a common reference wire; and

a controller coupled opposite the plurality of different CPEs, the controller comprising:

means for collecting data regarding transmissions across the communications channels of the multiple loop segment; and

means for controlling vectoring of transmissions across the communications channels of the multiple loop segment to vector upstream and downstream transmissions with the plurality of CPEs simultaneously across all active channels of the communications channels of the coupled plurality of the loops of the segment.

63. (Previously Presented) The DSL system of Claim 62, further comprising a vector signal processing module coupled to the controller and opposite the plurality of different CPEs to perform vectoring of the transmissions in response to the controller.

64. (Previously Presented) The DSL system of Claim 63, further comprising a first impedance matching circuit coupled between a first end of the multiple loop segment and the CPEs and a second impedance matching circuit coupled between a second end of the multiple loop segment and the vector signal processing module.

65. (Currently Amended) The DSL system of Claim 64 ~~Claim 63~~, further comprising a second vector signal processing module coupled to the first impedance matching circuit resident at one of the plurality of different CPEs.

66. (Previously Presented) The DSL system of Claim 62, wherein the multiple loop segment couples customer premises equipment to a pedestal.

67. (Previously Presented) The DSL system of Claim 62, wherein the multiple loop segment couples a first pedestal to a second pedestal.

68. (Currently Amended) A method of sending DSL signals through multiple communication channels comprising:

sending a first signal through a first communications channel to a first customer premises equipment (CPE) using at least two wires of a multiple loop segment, wherein

the first communication channel comprises at least two wires of the multiple loop segment referenced to a third common reference wire of the multiple loop segment;

sending a second signal through a second communications channel to a second CPE at a different location using a second at least two wires of the same multiple loop segment; and

vectoring upstream and downstream transmissions through the first and second communications channels simultaneously across the first and second communications channels and the first and second CPEs from an upstream location coupled to the first and second communications channels opposite the CPEs~~,~~

~~wherein the first communication channel comprises at least two wires of the multiple loop segment referenced to a third common reference wire of the multiple loop segment~~.

69. (Previously Presented) The method of Claim 68, wherein vectoring comprises one-sided vectoring from the location opposite the CPEs.

70. (Currently Amended) The method of Claim 68, ~~the method of claim 26~~ wherein vectoring transmissions across the multiple loop segment comprises two-sided vectoring.

71. (Previously Presented) The method of Claim 68, further comprising collecting data regarding transmissions across the multiple loop segment and providing vectoring control signals to a vectoring unit of the multiple loop segment based on the monitoring.

72. (Previously Presented) The DSL system of Claim 68, wherein the multiple loop segment comprises a plurality of twisted pairs numbering K twisted pairs so that

there are 2K wires in the segment, one of the 2K wires being selected as a reference wire, the remaining (2K-1) wires being referenced to the reference wire to provide up to (2K-1) communications channels, the (2K-1) channels using vectoring across the channels.

73. (Currently Amended) A computer-readable medium having instructions stored thereon, that when executed by a computer causes the computer to perform operations comprising:

collecting data regarding DSL (Digital Subscriber Line) transmissions on a plurality of loops of a multiple loop segment, each loop having a pair of wires to carry transmissions to customer premises equipment (CPE), the plurality of loops forming a plurality of communications channels to a plurality of different CPEs at different locations, at least one channel comprising at least two wires of the multiple loop segment referenced to a third common reference wire of the multiple loop segment; and

generating control signals to simultaneously control vectoring of the transmissions across the plurality of loops with the plurality of different CPEs across different communications channels of the coupled plurality of loops of the segment~~,~~

~~wherein the first communication channel comprises at least two wires of the multiple loop segment referenced to a third common reference wire of the multiple loop segment~~.

74. (Previously Presented) The medium of Claim 73, wherein the operations further comprise providing the control signals to a vectoring unit to vector upstream and downstream transmissions across the different communication channels.

75. (Previously Presented) The medium of Claim 73, wherein the operations further comprise generating control signals to control the frequency bandwidth used in transmitting data across the different communication channels.